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## Memo

*DATE:* February 23, 2007

*TO:* RHIC E-Coolers

*FROM:* *Ady Hershcovitch*

*SUBJECT:* **Minutes of the February 23, 2007 Meeting**

Present: Ilan Ben-Zvi, Michael Blaskiewicz, Mike Brennan, Eunmi Choi (MIT), Alexei Fedotov, Wolfram Fischer, Harald Hahn, Peggy Harvey, Ady Hershcovitch, Dmitry Kayran, Jorg Kewisch, Vladimir Litvinenko, William Mackay, Thomas Roser, Alessandro Ruggiero, Dejan Trbojevic.

Topic discussed: Stochastic Cooling

**Stochastic Cooling:** The meeting consisted of a presentation by Mike Blaskiewicz on transverse stochastic cooling plans for the next few years. Mike started with a short review of the theory behind stochastic cooling. Basically, transverse stochastic cooling is a transverse wide-band damper comprising of pickups and kickers.

Next Mike showed a series of simulations for cooling 5 nsec bunches each containing  $10^9$  gold ions with 100 nsec intervals between bunches. The kicker is comprised of 21 cavities. Delay from pickup to kicker is  $2/3$  of a turn; the band is 4 to 9 GHz. In the simulations and computations, no intrabeam scattering (IBS) considered, since it is assumed that this transverse stochastic cooling is much faster than heating due to IBS. The results of the computations and simulations indicate that emittance-cooling rate is about 1 hour, though not as much as electron beam cooling.

Mike showed a sample cavity. The upgrade can be performed relatively quickly at a cost of about \$5,000,000.

A discussion ensued during and following the presentation. Thomas asked whether cooling transverse edges is possible. Mike replied that it might be possible but that he was not sure. To Ilan's question about the optimal power of the cavity, the reply was that 40 W should be sufficient for a 2.5 sigma kick. To Vladimir's question regarding instabilities driven by the cavities, Mike replied that the transverse impedance is probably too low to drive instabilities at these fairly high frequencies, but he'll check. Finally a discussion involving Mike, Alessandro, Waldo, Ady, Ilan Alexei, Mike Brennan, and Vladimir on the compatibility of stochastic and electron beam cooling, reached a consensus that the two are complimentary, and that electron beam cooling would be enhanced by stochastic cooling.